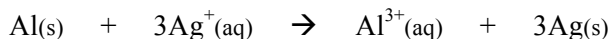


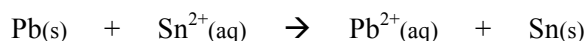
### Nernst Equation Problems

A galvanic cell utilizes the following reaction:



What is the effect on the cell potential if each of the following changes? (a) Water is added to the anode compartment. (b) The size of the aluminum electrode increases. (c) A solution of  $\text{AgNO}_3$  is added to the cathode compartment, increasing the quantity of the  $\text{Ag}^+$  but not changing its concentration. (d)  $\text{HCl}$  is added to the compartment containing  $\text{AgNO}_3$ .

A galvanic cell utilizes the following reaction:



If the concentration of  $\text{Sn}^{2+}$  in the cathode compartment is  $1.00\text{ M}$  and the cell generates a potential of  $+0.22\text{ V}$ , what is the concentration of  $\text{Pb}^{2+}$  in the anode compartment? If the anode compartment contains  $[\text{SO}_4^{2-}] = 1.00\text{ M}$  in equilibrium with  $\text{PbSO}_4(\text{s})$ , what is the  $K_{\text{sp}}$  of  $\text{PbSO}_4$ ?

### Electrolysis Problems

A  $\text{Cr}^{3+}(\text{aq})$  solution is electrolyzed using a current of  $7.60\text{ A}$ . What mass of  $\text{Cr(s)}$  is plated out after  $2.00$  days? What amperage is required to plate out  $0.250\text{ mol Cr}$  from a  $\text{Cr}^{3+}$  solution in a period of  $8.00\text{ h}$ ?

Metallic magnesium can be made by the electrolysis of molten magnesium chloride. What mass of  $\text{Mg}$  is formed by passing a current of  $5.25\text{ A}$  through molten  $\text{MgCl}_2$  for  $2.50$  days? How many minutes are needed to plate out  $10.00\text{ g Mg}$  from molten  $\text{MgCl}_2$ , using  $3.50\text{ A}$  of current?